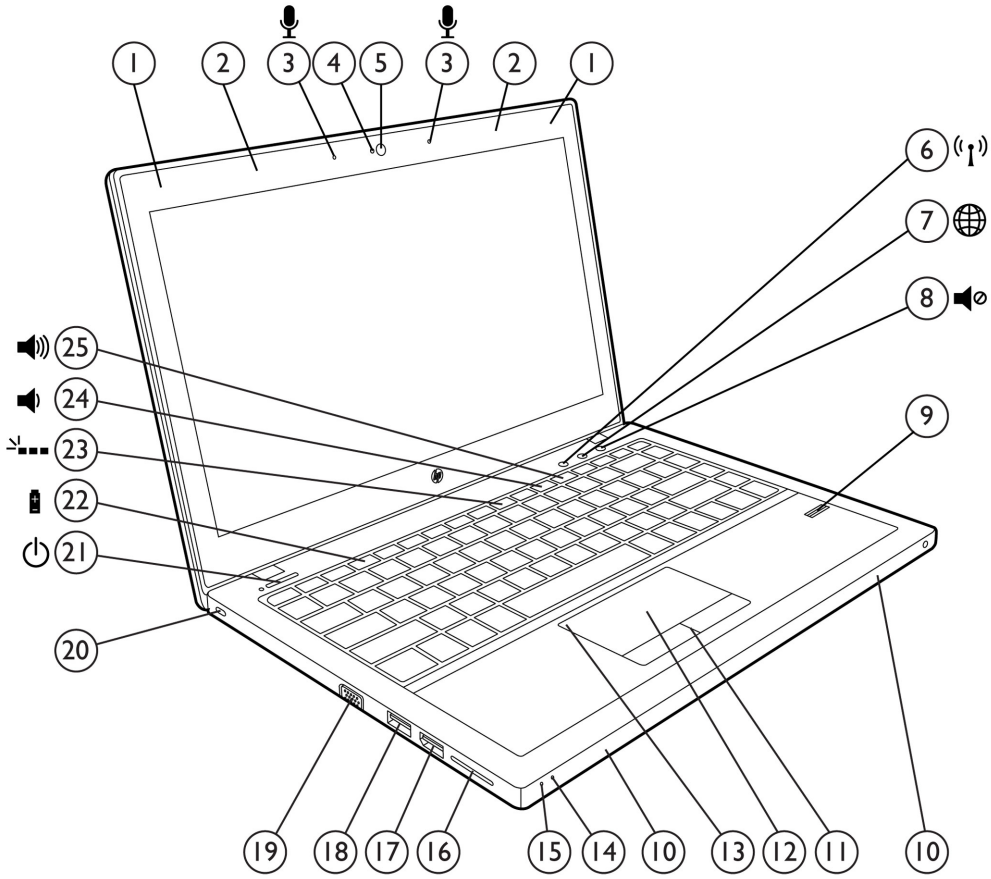
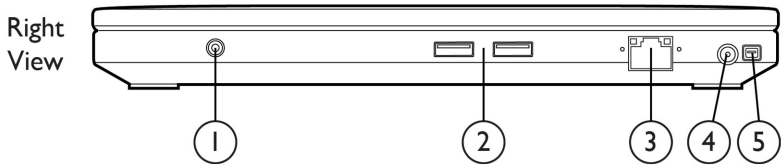
Overview

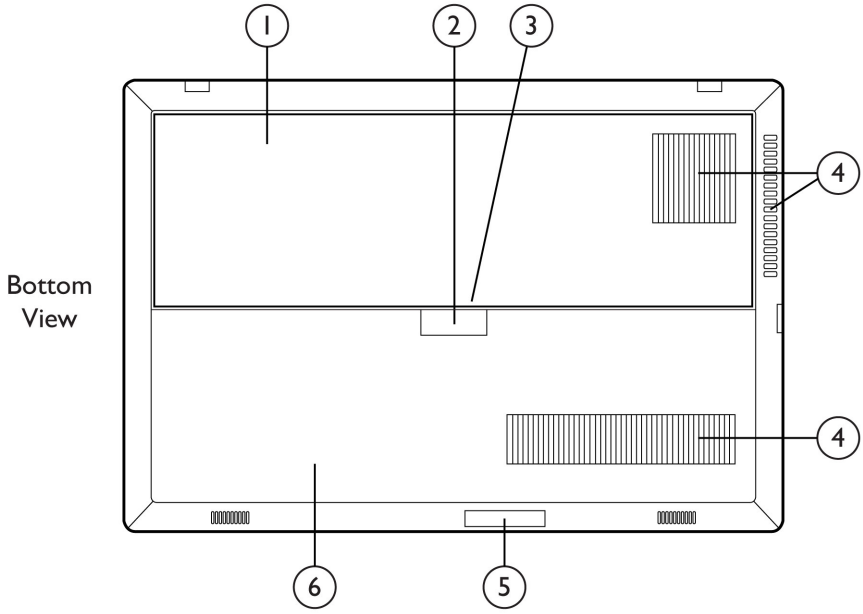


1. WLAN antennas (2)
2. WWAN antennas (2)
3. Dual-microphone array
4. Webcam light (with webcam)
5. HD webcam
6. Wireless on/off button with LED indicator
7. HP QuickWeb button with LED indicator
8. Volume mute button with LED indicator
9. HP Fingerprint Sensor
10. Stereo speakers
11. Touchpad buttons (2)
12. Touchpad with scroll zone
13. Touchpad on/off tap zone with LED
14. Hard drive activity / HP 3D DriveGuard LED
15. Power/standby LED indicator
16. Secure Digital/MMC slot
17. HDMI port
18. eSATA/USB 2.0 combo port
19. VGA/external monitor connector
20. Security lock slot
21. Power button with LED indicator
22. HP Power Assistant function key
23. Backlit keyboard function key
24. Volume down function key
25. Volume up function key

Overview



1. Combo stereo headphone/microphone jack
2. 2 USB 2.0 ports (charging port on left)
3. RJ-45/Ethernet port
4. Power connector
5. Battery charging LED



1. Battery bay
2. Battery cover release latch
3. SIM slot for WWAN (select models) – inside battery bay
4. Vents
5. Bluetooth compartment
6. Wireless/memory/hard drive access door

Overview

At A Glance

- Genuine Windows® 7 versions, SUSE Linux Enterprise Desktop 11, or FreeDOS
- Choice of 2nd generation Intel® Core™ i5 and i3 standard voltage processors
- Intel Core i5 with vPro technology (optional)
- Enhanced security features, including standard HP Fingerprint Sensor, TPM 1.2 Embedded Security Chip, HP ProtectTools with Central Management, Face Recognition for HP ProtectTools, HP SpareKey, and HP Disk Sanitizer
- Lightweight magnesium alloy bottom case, high-strength anodized aluminum display enclosure, bead-blast aluminum finish, polished-chrome finish drop hinge, and dual-tone color
- Standard backlit keyboard for low-light conditions
- 13.3-inch diagonal LED-backlit HD 16:9 antiglare display; HP Privacy Filter support
- Beats Audio technology for outstanding digital music playback, multimedia presentations, and web casting
- Two external monitor ports: HDMI for high definition, plus VGA for legacy displays and projectors
- Flexible wireless connectivity options:
  - Optional integrated HP hs2340 HSPA+ Mobile Broadband Module connects to both HSPA and HSPA+ (UMTS) networks and provides GPS functionality
  - Optional integrated HP un2430 EV-DO/HSPA Mobile Broadband Module (Gobi 3000) provides GPS functionality
  - Integrated Intel® Centrino® 802.11 a/b/g/n 2x2, or Broadcom 802.11 a/b/g/n 2x2 or b/g/n 1x1 wireless LAN module
  - Bluetooth v2.1+EDR
  - HP Connection Manager
- HP QuickWeb for convenient online access without the standard startup time
- HP DayStarter displays your calendar and battery charge while Windows starts up
- HP Power Assistant to conserve power, stretch battery runtime, accurately monitor your reported power need, and report workforce power consumption
- Choice of 320/500-GB 7200 rpm SMART SATA II hard drive protected by HP 3D DriveGuard; or 128 GB Solid State Drive
- Optional HP USB 2.0 Docking Station and HP Mobile USB DVDRW
- BFR/PVC-free*, ENERGY STAR qualified and EPEAT Silver Target registered in the U.S. EPEAT status varies by country- please see epeat.net

* Meeting the industry definition of 'BFR/PVC-free' per the iNEMI Position Statement on "Low Halogen" Electronics. Plastic parts incorporated into the chassis generally contain < 1000 ppm (0.1%) of bromine or chlorine. Printed circuit board and substrate laminates generally contain < 1500 ppm (0.15%) of total bromine and chlorine. Service parts after purchase may not be BFR/PVC-free. External accessories, including power supplies, power cords, and peripherals as well as the following customer-configurable internal components: ATT SIM card are not BFR/PVC-free.

Standard Features

Processors	**2nd Generation Intel Core i5 Processors** Intel Core i5-2520M Processor (2.50 GHz, 3 MB L3 cache, 2 cores/4 threads, 35W)* Up to 3.20 GHz with Intel Turbo Boost Technology **2nd Generation Intel Core i3 Processors** Intel Core i3-2330M Processor (2.20 GHz, 3 MB L3 cache, 2 cores/4 threads, 35W)* † Intel Core i3-2310M Processor (2.10 GHz, 3 MB L3 cache, 2 cores/4 threads, 35W)* † * Intel's numbering is not a measurement of higher performance. † Not available with vPro. NOTE: Processor speed denotes maximum performance mode; processors will run at lower speeds in battery optimization mode.	
Operating System	**Preinstalled**	Genuine Windows 7 Professional 32* Genuine Windows 7 Professional 64* Genuine Windows 7 Home Premium 64* SUSE Linux Enterprise Desktop 11 FreeDOS
	Supported	Genuine Windows XP Professional 32
	Certified	SUSE Linux Enterprise Desktop 11
	* System may require upgraded and/or separately purchased hardware and/or a DVD drive to install the Windows 7 software and take full advantage of Windows 7 functionality. See www.microsoft.com/windows/windows-7/ for details.	
Chipset	Mobile Intel QM67 Express Chipset	
Intel Core i5 with vPro technology capable	Intel Core i5 processor with vPro technology is a selectable feature that is available on units configured with select processors, an Intel Centrino WLAN module, and a preinstalled Windows operating system. It provides advances in remote manageability, security, energy-efficient performance, and wireless connectivity. Intel Active Management Technology 7.0 (iAMT) offers built-in manageability and proactive security for networked notebook PCs, even when they are powered off or when the operating system is inoperable.* It can help identify threats before they reach the network, isolate infected systems, and update PCs regardless of their power state. *Requires a Windows operating system, network hardware and software, connection to a power source, and a direct (non-VPN) corporate network connection, which is either through a cable or a wireless LAN. NOTE: Some functionality of Intel Core i5 processor with vPro technology, such as Intel Active Management technology and Intel Virtualization technology, requires additional third-party software in order to run. Availability of future "virtual appliances" applications for the Intel Core i5 processor with vPro technology is dependent on third-party software providers. Compatibility with future "virtual appliances" is yet to be determined.	
Graphics	Intel HD Graphics 3000 Microsoft® DirectX 10.1 (with Shader Model 4.1) and OpenGL 3.0 capable	

Standard Features

Display	Internal	13.3 in. diagonal LED-backlit HD antiglare (1366 × 768 resolution) HP Privacy Filter support
	External	Up to 32-bit per pixel color depth VGA port supports resolutions up to 1600 x 1200 at 75 Hz, and lower resolutions at up to 100 Hz HDMI port supports direct connection to high-definition displays with up to 1920 x 1200 resolution and 7-channel audio with one convenient cable (not included). NOTE: Resolutions are dependent upon monitor capability, and resolution and color depth settings.

Memory	Standard	PC3-10600 DDR3 SDRAM (1333 MHz)* Two SODIMM slots supporting dual-channel memory 2 GB and 4 GB SODIMMs
	Maximum	Upgradable to 8 GB with 4 GB SODIMMs in slots 1 and 2
	Dual-channel	Maximized dual-channel performance requires SODIMMs of the same size and speed in both memory slots.

* All memory modules operate at the maximum system supported speed of 1066 MHz.
NOTE: Due to the non-industry standard nature of some third-party memory modules, we recommend HP branded memory to ensure compatibility. Availability of 4 GB or more of memory requires a Windows 64-bit operating system or Linux. With Windows 32-bit operating systems, memory above 3 GB may not all be available due to system resource requirements.

Communications	Integrated Intel 82579LM Gigabit* Network Connection

* The term "10/100/1000" or "Gigabit" Ethernet indicates compatibility with IEEE standard 802.3ab for Gigabit Ethernet, and does not connote actual operating speed of 1 Gb/s. For high-speed transmission, connection to a Gigabit Ethernet server and network infrastructure is required.

Wireless Devices	Support for a broad range of secure, integrated wireless LAN and wireless WAN options featuring support for the latest industry standards. Mobile broadband (WWAN) requires a Windows operating system and is available in select countries as a standard, factory-configurable feature or as an option to be added later. Integrated Bluetooth is also available (factory configurable only) and can be combined with any of the supported wireless LAN and wireless WAN options.	
	Mobile Broadband options	Two 850/900/1575/1700/1800/1900/2100 MHz antennas integrated in the top of the display panel support current and future WWAN technologies. NOTE: A separately purchased mobile network operator service is required.
	HP hs2340 HSPA+ Mobile Broadband module	Integrated mobile broadband module that provides connectivity to both HSPA and HSPA+ (UMTS) networks. It also provides standalone, Internet and network-assisted GPS functionality for various mapping applications and security applications such as Computrace Pro for HP ProtectTools.
	HP un2430 EV-DO/HSPA Mobile Broadband module	Integrated mobile broadband module with Gobi global mobile Internet technology that provides connectivity to both CDMA (EVDO) and UMTS (HSPA) networks. It also provides GPS functionality for various mapping applications and security applications such as Computrace LoJack Pro Premium for HP ProtectTools.
	All 802.11 integrated	Wi-Fi Certified*

Standard Features

	wireless LAN options	Cisco Compatible Extensions support Wired Equivalent Privacy (WEP) support up to 128-bit keys Wi-Fi Protected Access (WPA) and WPA2 support 802.1x authentication support, including EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, and LEAP Advanced Encryption Standard (AES) support Dual antennas integrated in the display enclosure
	Intel Centrino Advanced-N 6205 (2x2)	Integrated support for 802.11a, b, g, and n* 2 transmit, 2 receive antennas Up to 300 Mb/s data rate
	Broadcom 43224AGN 802.11a/b/g/n WiFi Adapter	Integrated support for 802.11 a, b, g, and n Up to 300 Mb/s data rate
	Broadcom 4313GN 802.11b/g/n WiFi Adapter	Integrated support for 802.11 b, g, and n Up to 72 Mb/s data rate
	HP Integrated Module with Bluetooth 2.1+EDR Wireless Technology	Bluetooth Specification v2.1+EDR compliant Works with a wide range of Bluetooth devices
Keyboard	The 101-/102-key compatible keyboard features a full-pitch key layout with desktop keyboard features, such as editing keys, both left and right control and alt keys, and function keys. US and International key layouts are available.	
	Backlit Keyboard	The standard backlit keyboard for low-light environments is toggled on and off with a function key.
Launch buttons and function keys	Separate launch buttons provide easy access to the following features: wireless on/off, HP QuickWeb, and volume mute. Function keys provide control of features, including HP Power Assistant, a backlit keyboard, volume down, and volume up.	
Pointing device	Touchpad with gestures support, on/off button with LED indicator, two-way scroll, two pick buttons	
Storage	Internal storage device (2.5 in.)	320/500 GB 7200 rpm SMART SATA II hard drive 320 GB 7200 rpm SMART SATA II self-encrypting hard drive or 128 GB 2.5 in. solid-state drive
	NOTE: Hard drives are customer removable and will withstand multiple insertion/removal cycles. Up to 20 GB is reserved for the system recovery software.	
	HP 3D DriveGuard (Windows models only)	The hard drive is mounted to the notebook frame, reducing the transmission of shock away from the hard drive. Uses three-axis digital motion detection with intelligent sensitivity to help protect the hard drive from shock and vibration during normal use. The digital accelerometer temporarily halts all data transfer and parks the hard drive when abrupt motion is detected.
	Optical drive	Optional HP Mobile USB DVDRW Drive

Standard Features

Expansion card slots	Secure digital/MMC slot	Supports Secure Digital (SD), MultiMedia Card (MMC)
Interfaces	External monitor	Two - HDMI and VGA
	Combo headphone/ microphone jack	One
	RJ-45/Ethernet	One
	USB 2.0	Two (including one powered USB 2.0 port)
	eSATA/USB 2.0 combo	One
	Power connector	One

Audio/Visual

Beats Audio
Stereo speakers
Integrated dual-microphone array
Combo headphone/microphone jack

HD webcam

- HD format (widescreen)
- Supports web casting and still image capture
- High-quality fixed-focus lens
- Video capture at various resolutions up to 1280 x 720 resolution (720p) and up to 30 fps
- M-JPEG compression supports higher frame rates for video capture and web casting
- Improved low-light sensitivity
- Improved dynamic range

Software	Preinstalled software with Windows operating system	HP Recovery Manager HP Support Assistant HP ProtectTools Security Manager HP QuickWeb HP Power Assistant HP Connection Manager HP DayStarter Microsoft Office 2010 preloaded; Purchase Key* Norton Internet Security 2011** PDF Complete Special Edition*** Roxio Secure Burn (select models) HP Webcam software (select models) Skype
	Additional software available from the web	HP SoftPaq Download Manager

* Includes reduced functionality versions of Word and Excel. Purchase of a Product Key is required to activate the full Office 2010 suite and is available at participating resellers/retailers and at www.office.com.
** Norton Internet Security 2011 includes 60 days of complimentary live updates; a subscription is required for live updates thereafter. Internet access is required to receive updates.
*** PDF Complete Special Edition 60-day trial; a license must be purchased afterward for full functionality.

HP Recovery Manager	Models shipped with Windows 7 include HP Recovery Manager, which enables fast recovery of the factory-preinstalled image if the system becomes corrupted or if important system files are accidentally deleted. Up to 20 GB of the hard drive is reserved for the system recovery software.		
Security	Standard features	HP ProtectTools Security Manager (standard modules include) • Credential Manager • Computrace* Pro • Device Access Manager • Drive Encryption • Face Recognition • File Sanitizer • Privacy Manager • Embedded Security HP Fingerprint Sensor Enhanced Pre-Boot Security (Multiuser/Multifactor) HP SpareKey One-Step Logon TPM 1.2 Embedded Security Chip** HP Disk Sanitizer Security lock slot Support for Intel AT***	
	Optional features	HP Privacy Filter	Narrows viewing area so that screen data is visible only to persons directly in front of the monitor.
		Computrace* Pro for HP ProtectTools with GPS Tracking	Subscription-based security solution providing the ability to track, initiate physical recovery, conduct asset management, and perform remote data delete by utilizing GPS technology. GPS functionality requires HP Mobile Broadband Module.

* The Computrace agent is shipped turned off and must be activated by customers when they purchase a subscription with terms ranging from one to five years.
** The TPM module is disabled in locations where use is restricted by law, for example, Russia and China.
For more information on HP security solutions, refer to: www.hp.com/products/security.
*** Intel AT security requires a separately purchased Absolute Computrace service subscription and must be activated and configured. Check with Absolute for availability in your country. Intel and HP assume no liability for lost or stolen data and/or systems or any other damages resulting therefrom. See www.intel.com/technology/anti-theft/.

Standard Features

HP ProtectTools Security Manager with Central Management	HP ProtectTools Security Manager is the security platform for business notebooks and desktops. The HP ProtectTools Security Manager is an extensible client security console that delivers enhanced security capabilities through add-on software modules. The ProtectTools modules are available on the hard drive (also downloadable from the Web) and can be configured in Software Setup. HP ProtectTools is centrally manageable and has the capability to manage notebooks from a single point. HP ProtectTools is management ready out of the box, in partnership with Digital Persona. Features address requirements that customers expect from a centrally managed security solution such as user provisioning, credential reset, and credential revocation. HP ProtectTools provides two separate management solutions, targeted at the enterprise and the SMB: • Digital Persona Pro AD: Designed for the enterprise customer, this solution integrates with Active Directory and gives IT managers the ability to provision users, and create login policies based on passwords, biometrics, or smartcards. Management features also include remote credential recovery in case a user forgets their password, loses their smartcard, or cannot use their fingerprint reader for any reason. In addition, advanced auditing capabilities are also built in. Digital Persona Pro AD is available now. • Digital Persona Pro Workgroup: Designed for the small business customer, this solution provides features similar to the Active Directory version, but for workgroups. Workgroup activation is built into HP ProtectTools, and activation of up to five seats is completely free. For more information on Central Management for HP ProtectTools, refer to www.hp.com/products/security.
Power Supply	External Standard 65 W Smart AC adapter External Slim 65 W Smart AC adapter Power cord included is 6 ft (1.8 m) Total length, including external AC adapter, is 12 ft (3.66 m).
Battery	**Primary Battery** 4-cell (41 WHr) high-capacity Lithium-ion Polymer

Battery Life	**With solid-state drive**	**With hard drive**
4-cell primary battery	Up to 5 hours and 45 minutes	Up to 5 hours and 15 minutes

NOTE: Battery life will vary depending on the product model, configuration, loaded applications, features, use, wireless functionality, and power management settings. The maximum capacity of the battery will naturally decrease with time and usage. See MobileMark07 battery benchmark at: www.bapco.com/products/mobilemark2007 for additional details.

System standby time Up to 1 week

Standard Features

Power Conservation	Supports enhanced Intel SpeedStep technology (allows Battery-Optimized mode, Maximum Performance mode, or Automatic mode) Intel Display Power Saving technology Hibernation Standby ACPI compliance
Service and Support	HP Services includes a one-year standard parts and labor warranty, pick-up or carry-in, and toll-free 24x7 hardware technical phone support (depending on model). Onsite service and warranty upgrades are also available (depending on the model). HP Care Pack Services extend service contracts beyond standard warranties. To choose the right level of service for your HP product, use the HP Care Pack Services Lookup Tool at: www.hp.com/go/lookuptool. Additional HP Care Pack Services information by product is available at: www.hp.com/services/carepack. NOTE: Certain restrictions and exclusions apply. Consult the HP Customer Support Center for details at: http://h20000.www2.hp.com/bizsupport/TechSupport/ProductRoot.jsp.

Options

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NOTE: Options/capabilities listed in the QuickSpecs represent those capabilities available through Base Units or Build to Order configurations. The various product features and capabilities will vary in terms of configurable vs. aftermarket options (AMOs). There may be options and capabilities available through CTO that are not available as AMOs.

Memory	HP 2 GB (DDR3 1333 MHz)* SODIMM	AT912AA#xxx
	HP 4 GB (DDR3 1333 MHz)* SODIMM	AT913AA#xxx
	* All memory modules operate at the maximum system supported speed of 1066 MHz.	
Storage	HP 250 GB Pocket Media Drive	FE477AA
	HP Mobile USB DVDRW	BU516AA
	HP Mobile USB DVD	XQ543AA
Expansion Solutions	HP USB 2.0 Docking Station	AY052AA#xxx
	HP Essential USB 2.0 Port Replicator	AQ731AA#xxx
	HP LAN and USB Travel Hub	BM868AA#xxx
Power	HP 90W Smart AC Adapter	ED495AA#xxx
	HP 90W Slim AC Adapter	BT796AA#XXX
	HP 90W Smart AC/Auto/Air Combo Adapter	AJ652AA#xxx
	HP 90W Smart Auto/Truck Adapter	ED493AA
	HP 65W Slim Adapter	AX727AA#xxx
Carrying Cases	HP Basic Carrying Case	AJ078AA
	HP Business Nylon Case	BP848AA
	HP Professional Slim Top Load Case	AY530AA
Security	HP Notebook Combo Lock	AY475AA#xxx
	HP Keyed Cable Lock	BV411AA
	HP Privacy Filter for 13.3 in.	AU649AA
Input/Output Devices	HP USB Keyboard and Mouse Bundle	RC465AA#xxx
	HP USB/PS2 Optical 2-Button Scroll Mouse	DC369A
	HP USB Optical Travel Mouse	RH304AA
	HP Notebook Companion Projector	AX325AA#xxx

System Unit	**Dimensions** (HxWxD)	0.99 in x 12.91 in x 8.86 in 25.2 mm x 328 mm x 225 mm	
	Weight	Starting from 3.99 lb (1.82 kg)	
	NOTE: Starting weight includes 4-cell battery, SSD, 2 GB memory. Weight varies by configuration and components.		
	Stand-Alone Power Requirements (AC Power)	Nominal Operating Voltage	18.5 V
		Average Operating Power	TBD W
		Max Operating Power	< 65 W
	Temperature	Operating	32° to 95° F (0° to 35° C) (not writing optical) 41° to 95° F (5° to 35° C) (writing optical)
		Non-operating	-4° to 140° F (-20° to 60° C)
	Relative Humidity	Operating	10% to 90%, non-condensing
		Non-operating	5% to 95%, 101.6° F (38.7° C) maximum wet bulb temperature
	Shock	Operating	125 G, 2 ms, half-sine
		Non-operating	200 G, 2 ms, half-sine
	Random Vibration	Operating	0.75 grms
		Non-operating	1.50 grms
	Altitude (unpressurized)	Operating	-50 to 10,000 ft (-15.24 to 3,048 m)
		Non-operating	-50 to 40,000 ft (-15.24 to 12,192 m)
	Industry Standard Certifications	UL	Yes
		CSA	Yes
		FCC Compliance	Yes
		EPEAT	TBD (Gold target)*
		ICES	Yes
		Australia / NZ A-Tick Compliance	Yes
		CCC	Yes
		Japan VCCI Compliance	Yes
		MIC	Yes
		BSMI	Yes
		CE Marking Compliance	Yes
		BNCI or BELLIS	Yes
		CIT	Yes
		GOST	Yes
		Saudi Arabian Compliance (ICCP)	Yes
		SABS	Yes
		UKRSERTCOMPUTER	Yes

* EPEAT Registered TBD in U.S. (requires Microsoft Windows). EPEAT registration varies by country. See www.epeat.net for registration status by country.

For accessibility information on HP products, please visit: http://www.hp.com/accessibility.

Audio	SRS Premium Sound	
Hardware	Implementation	IDT 92HD80 High Definition CODEC
	Function Key Volume Controls	Volume up, volume down
	Mute Button	Volume mute button with LED indicator
	Full Duplex	Yes
	Microphone In	Stereo
	Headphone/Line Out	Stereo
	Integrated Microphone	Yes, dual digital microphone array when equipped with optional webcam
Audio Output Quality	Frequency Response	20 Hz – 20 kHz
	Signal to Noise Ratio	>85 dB
	Total Harmonic Distortion	0.01%
	Noise Floor	–110 dB
	Play/Record Sampling Rate(s)	8 kHz – 48kHz
	DAC	16, 20 or 24-bit
	ADC	16 or 20-bit
Integrated Stereo Speakers	Power Rating	2 Watts
	Impedance	4 Ohms
Power		

Technical Specifications

HP 65W Smart AC Adapter	Dimensions	4.17 x 1.85 x 1.1 in (10.6 x 4.7 x 2.8 cm)	
	Weight	0.62 lb (280 g)	
	Input	100 to 240 VAC	
		Input Efficiency	87% min at 115 VAC
		Input frequency range	47 to 63 Hz
		Input AC current	1.7 A at 90 VAC, 0.85 A at 180 VAC
	Output	Output power	65W
		DC output	18.5V
		Hold-up time	5 msec at 115 VAC input
		Output current limit	<11A, Over voltage protection- 29V max automatic shutdown
	Connector	3 pin/grounded, mates with interchangeable cords	
	Environmental Design	Operating temperature	32° to 104° F (0° to 40° C)
		Non-operating (storage) temperature	-4° to 149° F (-20° to 65° C)
		Altitude	0 to 10,000 ft (0 to 3,048 m)
		Humidity	20% to 80%
		Storage Humidity	10% to 90%
	EMI and Safety Certifications	CE Mark - full compliance with LVD and EMC directives; Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE; MTBF - over 200,000 hours at 25°C ambient condition.	

4-cell (41 WHr) Lithium-Ion Polymer Battery FN04041	Dimensions (H x W x L)	0.4 x 3.8 x 8.6 in (0.8 x 9.5 x 21.8 cm)	
	Weight (max)	0.64 lb (0.287 kg)	
	Cells/Type	Lithium-Ion Polymer	
	Energy	Voltage	14.8V
		Amp-hour capacity	2.8Ah
		Watt-hour capacity	41Wh
	Temperature	Operating (Charging)	32° to 113° F (0° to 45° C)
		Operating (Discharging)	14° to 122° F(-10° to 50° C)
		Non-operating	-4° to 122° F (-20° to 50° C)
	Battery Re-Charge Time	System in OFF or Standby Mode	3 hours
		System ON	3 to 5 hours
	Fuel Gauge LED	No	
	Warranty	1 year	
	Optional Travel Battery Available	No	

Technical Specifications

Displays

13.3-inch LED HD (1366 x 768) anti-glare	Dimensions (W x H)	11.53 x 6.49 in (29.3 x 16.5 cm)	
	Diagonal Size	13.3 in (33.8 cm)	
	Surface Treatment	Anti-glare	
	Contrast Ratio	300:1 (typical)	
	Refresh Rate	60 Hz	
	Brightness	200 nit (typical)	
	Pixel Resolution	Pitch	0.215 mm
		Format	1366 x 768
		Configuration	RGB Stripe
	Backlight	LED	
	PPI	118 ppi	
	Viewing Angle	±30° Horizontal, ±10° Vertical (minimum) 30/30/20/10 (Left/Right/Down/Up) (minimum) or 45/45/35/25 (Left/Right/Down/Up) (typical)	

Internal Storage

500 GB 7200 rpm SATA Hard Drive	Drive Weight	0.25 lbs (115g)	
	Capacity	500 GB	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ	
	Transfer Rate	Synchronous (maximum)	300 MB/s (Drive Capability)
	Seek Time (typical reads, including settling)	Single Track	1.5 ms
		Average	11 ms
		Maximum	22 ms
	Rotational Speed	7200 rpm	
	Logical Blocks	976,773,168	
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
	Features	ATA Security	

Technical Specifications

320 GB 7200 rpm SATA Hard Drive	Drive Weight	0.25 lbs (115 g)	
	Capacity	320 GB	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ	
	Transfer Rate	Synchronous (maximum)	300 MB/s (Drive Capability)
	Seek Time (typical reads, including settling)	Single Track	1.5 ms
		Average	11 ms
		Maximum	22 ms
	Rotational Speed	7200 rpm	
	Logical Blocks	625,142,448	
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
	Features	ATA Security	

128 GB 2.5-inch SATA Solid State Drive	Drive Weight	75 Grams	
	Capacity	128 GB	
	Height	0.276 in (7 mm)	
	Width	2.76 in (70 mm)	
	Interface	SATA Gen 2	
	Performance	Maximum Sequential Read	Maximum Sequential Write
		250 MB/s	140 MB/s
	Logical Blocks	250,069,680	
	Operating Temperature	32° to 158°F (0° to 70°C) [case temp]	
	Features	ATA Security; ATA-7; SATA 2.6; DIPM; TRIM	

Security

HP Fingerprint Sensor	Mobile Voltage Operation	3.0V-3.6V Single Supply
	Operating Temperature	32° - 158°F (0° - 70°C)
	Current Consumption @ 3.3V	Less than 70 mA peak imaging and scrolling Less than 25 mA hardware finger detection Advanced Power Management
	High-Rate Image Capture	Up to 240 image frames /sec
	ESD Resistance	IEC 61000-4-2 Level 4 (±15KV)
	Detection Matrix	192 x 16 Pixels 9.7 mm x 0.81 mm 500 ppi High-Resolution Images

Communications

Intel® 82579LM Gigabit Network Connection	Ethernet Features	10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14) 100 10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14) 100 Mbit/s operation (100BASE-TX; IEEE 802.3u; IEEE 802.3 clauses 21-30) 1000 Mbti/s operation (1000BASE-T; IEEE 802.3ab; IEEE 8023. Clauses 40) Auto-Negotiation (Automatic Speed Selection) Full Duplex Operation at all Speeds, Half Duplex operation at 10 and 100 Mbit/s IEEE 802.1p QoS (Quality of Service) Support IEEE 802.1q VLAN support IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable) IEEE 802.3az EEE(Energy Efficient Ethernet) Jumbo Frame 9K Auto MDI/MDIX Crossover cable detection
	Power Management	ACPI compliant - multiple power modes Energy Detect Low Power Mode(Green Ethernet)
	Performance Features	TCP/IP/UDP Checksum Offload (configurable) Protocol Offload(ARP & NS) Large send offload and Giant send offload Receiving Side Scaling MACSec Offload (802.3ae) Intel vPro iSCSI Boot
	Manageability	Wake-on-LAN from standby and hibernation (Magic Packet and Microsoft Wake-Up Frame); Wake-on-LAN from off (Magic Packet only) PXE 2.1 Remote Boot Statistics Gathering (SNMP MIB II, Ethernet-like MIB, Ethernet MIB (802.3x, clause 30)) Comprehensive diagnostic and configuration software suite Virtual Cable Doctor for Ethernet cable status
	Interface	PCI Express 1.1 x1 to fully support ASPM L0s/L1 and CLKREQ. NOTE: Intel 82579 PCIe interface is not PCIe compliant. It operates at half of PCIe specification V1.1 (2.5GT/S) speed.
	NIC Device Driver Name	Intel 82579LM/82579V Ethernet Network Connection

Technical Specifications

HP un2430 EV-DO/HSPA Mobile Broadband Module	Technology/Operating Bands	GSM/GPRS/EDGE: 850MHz(Cell), 900MHz(EGSM), 1800MHz(DCS), 1900MHz (PCS) UMTS/WCDMA with receive diversity: 2100MHz (UTRA FDD Band I), 1900MHz (UTRA FDD Band II), AWS (UTRA FDD Band IV), 900MHz(UTRA FDD Band VIII), 850MHz (UTRA FDD Band V) 1xEVDO/1xRTT with receive diversity: 850MHz (Band Class0-Cell), 1900MHz (Band Class1-PCS)
	Wireless Protocol Standards	GSM/GPRS/EDGE: Class A, Multi-slot class 10 operation, coding schemes CS1 - CS4 and MSC1 - MSC9. UMTS/WCDMA: Release 99 and Release 6 CDMA: 1xEVDO Release 0 and Release A, IS-95A, IS-95B, IS-856, IS-2000
	Wireless Parametric Standards	Meets or exceeds TIA/EIA IS-98-D
	Maximum Data Rates	UMTS (HSPA) - 14.4 Mbps (Download), 5.76Mbps (Upload) CDMA (EVDO Release A) - 3.1 Mbps (Download), 1.8Mbps (Upload)
	GPS	Standalone GPS enabled gpsOneXTRATM™
	GPS Bands	L1 - 1575.42 MHz
	Maximum Output Power	GSM/GPRS/EDGE: 32dBm (+/-1) WCDMA: 24dBm (+0.7/-2.3) CDMA: 24dBm (+0.7/-2)
	Maximum Power Consumption	2750mA (peak); 1100mA (average)
	Power Consumption, Idle Not Connected	20 mA
	Power Management	USB selective suspend Integrated notebook wireless button
	Antenna Type	Dual high efficiency 5 band antennae with spatial diversity, mounted in the display enclosure
	Form Factor	PCI-Express MiniCard, USB 2.0 interface
	Weight	11.5 g
	Dimensions (Length x Width x Thickness)	2.01 x 1.18 x 0.18 in (51 x 30 x 5 mm)
	Voltage, Operating	3.3v +/- 10%
	Temperature, Operating (from TIA/EIA/IS-98-D)	-22° to 158° F (-30° to 70° C) (full RF performance) -22° to 167° F (-30° to 75° C) (reduced RF performance)
	Temperature, Non-operating, 96 hours (from MIL-STD 202 Method 108)	-40° to 185° F (-40° to 85° C)
	Humidity, Non-operating	95% relative humidity for 48 hours @ 185° F (85° C) (non-condensing)
	Configuration Utilities	HP Connection Manager
	LED Activity	LED Off - Radio Off; Solid LED On - Radio On
HP hs2340 HSPA+	Technology/Operating	GSM/GPRS/EDGE: 850MHz(Cell), 900MHz(EGSM), 1800MHz(DCS),

Technical Specifications

Mobile Broadband Module	Bands	1900MHz (PCS) UMTS/WCDMA with receive diversity: 2100MHz (UTRA FDD Band I), 1900Mhz (UTRA FDD Band II), 900Mhz(UTRA FDD Band VIII), 850 MHz (UTRA FDD Band V)
	Wireless Protocol Standards	GSM/GPRS/EDGE: Class B, Multi-slot class 10 operation, coding schemes CS1 - CS4 and MSC1 - MSC9. UMTS/WCDMA: Release 99 and Release 7 Advanced Receiver Type 3i
	Wireless Parametric Standards	Complies with 3GPP specifications
	Maximum Data Rates	UMTS (HSPA) - 21 Mbps (Download), 5.76Mbps (Upload)
	GPS	Standalone, A-GPS (Internet- and Network assisted)
	GPS Bands	1575.42 MHz (± 1.023 MHz)
	Maximum Output Power	GSM/EDGE GSM850 & GSM900 bands GPRS: +33 dBm ± 2 dBm (class 4) EGPRS: +27 dBm ± 3 dBm (class E2) DCS1800 & PCS1900 bands GPRS: +30 dBm ± 2 dBm (class 1) EGPRS: +26 dBm +4 / -3 dBm (class E2) UMTS UTRA FDD Bands +24 dBm +4 / -3 dBm (class 3)
	Maximum Power Consumption	2000mA (peak); 600mA (average)
	Power Consumption, Sleep Mode	5 mA
	Power Management	USB selective suspend Integrated notebook wireless button
	Antenna Type	Dual high efficiency 5 band antennae with spatial diversity, mounted in the display enclosure
	Form Factor	PCI-Express MiniCard, USB 2.0 interface
	Weight	< 12 g
	Dimensions (Length x Width x Thickness)	2.01 x 1.18 x 0.18 in (51 x 30 x 5 mm)
	Voltage, Operating	3.3v +/- 9%
	Temperature, Operating	14° to 149° F (-10° to 65° C) (full RF performance) 14° to 167° F (-10° to 75° C) (reduced RF performance)
	Temperature, Non-operating, 96 hours (from MIL-STD 202 Method 108)	-22° to 185° F (-30° to 85° C)
	Humidity, Non-operating	85% relative humidity for 48 hours @ 185° F (85° C) (non-condensing)
	Configuration Utilities	HP Connection Manager

	LED Activity	LED Off - Radio Off; Solid LED On - Radio On
Intel Centrino Advanced-N 6205	Wireless LAN Standards	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n* * In countries where 802.11n is not allowed, this capability is not enabled.
	Interoperability	Wi-Fi certified Cisco Compatible Extensions Program compliant with Microsoft Windows Vista and XP (details at: http://www.hp.com/go/notebooks/WLAN)
	Frequency Band	2.4 GHz and 5GHz
	Antenna Structure	2 transmit; 2 receive (2x2)
	Data Rates	802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11b: 1, 2, 5.5, 11 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n: 66 possible data rates, ranging from 6 Mbps to 300 Mbps, depending on the combination of Bandwidth, Modulation Coding Scheme, and Guard Interval used, as defined in IEEE 802.11n specification
	Modulation	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM, BPSK, QPSK, 16-QAM, 64-QAM
	Security[1]	Authentication: WPA and WPA2, 802.1x (EAP_TLS, TTLS, PEAP, LEAP, EAP-FAST) Authentication Protocols: PAP, CHAP, TLS, GTC, MS-CHAP, MS-CHAPv2 Encryption: 64 and 128-bit WEP, AES-CCMP, CKIP, TKIP Support for Cisco Security Features (proven compatibility with Cisco Aironet infrastructure products through the Cisco Compatible Extensions Program Version 4) with Microsoft Windows Vista and XP only.
	Sub-channels	Multinational support with frequency bands and channels compliant to local regulations.
	Media Access Protocol	CSMA/CA (Collision Avoidance) with ACK
	Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
	Roaming	IEEE 802.11 compliant roaming between 2.4GHz band Access Points
	Output Power (for CCK and OFDM)[2]	17 dBm max
	Power Consumption	Transmit: 2.3 Watts (max, with two spatial streams) Receive: 1 Watt (max with two spatial streams) Idle mode[3]: 35 mW (average) Radio off: 20 mW (max)
	Power Management	ACPI compliant power management 802.11 compliant power saving mode
	Receiver Sensitivity[4]	54 Mbps: -76 dBm, 6 Mbps: -92 dBm

Antenna Connections	2 U.FL type connectors, 50 ohm nominal impedance	
Form Factor	PCI-Express Half-MiniCard	
Weight	0.0075 lb (3.4 g)	
Dimensions	0.12 x 1.06 x 1.18 in (3.1 x 26.8 x 30.0 mm)	
Operating Voltage	3.3V +/- 9%	
Temperature	Operating	32° to 176° F (0° to 80° C)
	Non-operating	-40° to 176° F (-40° to 80° C)
Humidity	Operating	10% to 90% (non-condensing)
	Non-operating	5% to 90% (non-condensing)
Altitude	Operating	0 to 10,000 ft (3,048 m)
	Non-operating	0 to 50,000 ft (15,240 m)
LED Activity	LED Off - Radio OFF; Solid LED On - Radio ON	

1. Check latest software/driver release for updates on supported security features.
2. Maximum output power may vary by country according to local regulations.
3. In Power Save Polling mode and on battery power.
4. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CCK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).
5. WLAN supplier's client utility is required for Cisco Compatible Extensions support with Microsoft Windows XP. WLAN may also be compatible with certain third-party software supplicants. WLAN supplier IHV extensions required for Cisco Compatible Extensions support for Microsoft Windows Vista.

Broadcom 43224AGN 802.11a/b/g/n WiFi Adapter

Wireless LAN Standards	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n*
Interoperability	Wi-Fi certified (802.11abg only) Cisco Compatible Extensions Program compliant (802.11abg only) with Microsoft Windows Vista and XP (details at: http://www.hp.com/go/notebooks/WLAN)
Frequency Band	2.4 GHz and 5 GHz
Data Rates	802.11b: 1, 2, 5.5, 11 Mbps 802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n: 6, 6.5, 9, 12, 13, 13.5, 18, 19.5, 24, 26, 27, 36, 39, 40.5, 48, 52, 54, 58.5, 65, 78, 81, 104, 108, 117, 121.5, 130, 135, 162, 216, 243, 270, 300 Mbps
Frequency Support	20 MHz: 2.4 GHz and 5 GHz bands 40 MHz: 2.4 GHz and 5 GHz bands
Modulation	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM, BPSK, QPSK, 16-QAM, 64-QAM
Security[1]	Supports 64- and 128-bit WEP, WPA, WPA2, hardware-accelerated AES, 802.1x authentication types EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, LEAP, EAP-FAST. Support for Cisco Security Features (proven compatibility with Cisco Aironet infrastructure products through the Cisco Compatible Extensions Program Version 4) with Microsoft Windows Vista and XP only.

Sub-channels	Multinational support with frequency bands and channels compliant to local regulations.	
Media Access Protocol	CSMA/CA (Collision Avoidance) with ACK	
Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)	
Roaming	IEEE 802.11 compliant roaming between access points	
Output Power (for CCK)[2]	17 dBm , nominal	
Output Power (for OFDM; power varies by data rate)[2]	15 dBm , nominal	
Power Consumption	Idle associated: 250 mW Idle unassociated: 150 mW Transmit/Receive 20 MHz channel: 2.0 W (max) Transmit/Receive 40 MHz channel: 2.0 W (max)	
Power Management	ACPI compliant power management 802.11 compliant power saving mode	
Receiver Sensitivity[3]	270 Mbps: -61dBm, , 54 Mbps: -72 dBm, 11 Mbps: -85 dBm , 1 Mbps: -92 dBm	
Antenna type	High efficiency dual band antenna with spatial diversity, mounted in the display enclosure	
Form Factor	PCI-Express Half-MiniCard	
Weight	0.013 lb (6 g)	
Dimensions	0.19 x 1.06 x 1.18 in (4.75 x 26.8 x 30 mm)	
Operating Voltage	3.3v +/- 10%	
Temperature	Operating	14° to 149° F (-10° to 65° C)
	Non-operating	-40° to 176° F (-40° to 80° C)
Humidity	Operating	10% to 90% (non-condensing)
	Non-operating	5% to 95% (non-condensing)
Altitude	Operating	0 to 10,000 ft (3,048 m)
	Non-operating	0 to 50,000 ft (15,240 m)
LED Activity	LED Off - Radio OFF; Solid LED On - Radio ON	

1. Check latest software/driver release for updates on supported security features.
2. Maximum output power may vary by country according to local regulations.
3. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CCK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).
4. WLAN supplier's client utility is required for Cisco Compatible Extensions support with Microsoft Windows XP. WLAN may also be compatible with certain third-party software supplicants. WLAN supplier IHV extensions required for Cisco Compatible Extensions support for Microsoft Windows Vista.

Broadcom 4313GN 802.11b/g/n WiFi Adapter

Wireless LAN Standards	IEEE 802.11b IEEE 802.11g IEEE 802.11n
Interoperability	Wi-Fi certified Cisco Compatible Extensions Program compliant with Microsoft Win7, Vista and XP (details at: http://www.hp.com/go/notebooks/WLAN)

Frequency Band	2.4 GHz	
Data Rates	802.11b: 1, 2, 5.5, 11 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n: 6.5, 7.2, 13, 14.4, 19.5, 21.7, 26, 28.9, 39, 43.3, 52, 57.8, 58.5, 65, 72.2Mbps	
Frequency Support	20 MHz: 2.4 GHz bands	
Modulation	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM, BPSK, QPSK, 16-QAM, 64-QAM	
Security[1]	Supports 64- and 128-bit WEP, WPA, WPA2, hardware-accelerated AES, 802.1x authentication types EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, LEAP, EAP-FAST. Support for Cisco Security Features (proven compatibility with Cisco Aironet infrastructure products through the Cisco Compatible Extensions Program Version 4) with Microsoft Windows Vista and XP only.	
Sub-channels	Multinational support with frequency bands and channels compliant to local regulations.	
Media Access Protocol	CSMA/CA (Collision Avoidance) with ACK	
Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)	
Roaming	IEEE 802.11 compliant roaming between access points	
Output Power (for CCK)[2]	17 dBm , nominal	
Output Power (for OFDM; power varies by data rate)[2]	15 dBm , nominal	
Power Consumption	Idle associated: 250 mW avg (CLKREQ enabled) Idle unassociated: 425 mW avg Transmit/Receive 20 MHz channel: 5.5 W (max)	
Power Management	ACPI compliant power management 802.11 compliant power saving mode	
Receiver Sensitivity[3]	72.2 Mbps: -71dBm	
Antenna type	High efficiency dual band antenna with spatial diversity, usually mounted in the display enclosure	
Form Factor	PCI-Express Half-MiniCard	
Weight	0.013 lb (6 g)	
Dimensions	0.19 x 1.06 x 1.18 in (4.75 x 26.8 x 30 mm)	
Operating Voltage	3.3v +/- 10%	
Temperature	Operating Non-operating	14° to 149° F (-10° to 65° C) -40° to 176° F (-40° to 80° C)
Humidity	Operating Non-operating	10% to 90% (non-condensing) 5% to 95% (non-condensing)
Altitude	Operating Non-operating	0 to 10,000 ft (3,048 m) 0 to 50,000 ft (15,240 m)
LED Activity	LED Off - Radio OFF; Solid LED On - Radio ON	

1. Check latest software/driver release for updates on supported security features.
2. Maximum output power may vary by country according to local regulations.

3. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CCK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).
4. WLAN supplier's client utility is required for Cisco Compatible Extensions support with Microsoft Windows XP. WLAN may also be compatible with certain third-party software supplicants. WLAN supplier IHV extensions required for Cisco Compatible Extensions support for Microsoft Windows Vista and Win7.

HP Integrated Module with Bluetooth 2.1+EDR Wireless Technology	Bluetooth Specification	2.1+EDR Compliant	
	Dimensions	1.18 x 0.26 x 0.13 in (30 x 6.5 x 3.25 mm)	
	Frequency Band	2402 to 2480 MHz	
	Number of Available Channels	79 (1 MHz) available channels	
	Data Rates and Throughput	3 Mbps data rate; throughput up to 2.17 Mbps	
		Synchronous Connection Oriented links up to 3, 64 kbps, voice channels	
		Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric or 1306.9 kbps symmetric	
	Transmit Power	-6 dBm to 4 dBm (Bluetooth Class II)	
	Receiver Sensitivity	Better than -80 dBM at 0.1 % raw bit error rate	
	Power Consumption	Peak (Tx) 264 mW	
		Peak (Rx) 231 mW	
		Sleep <1 mW	
	Antenna	Internally integrated within module	
	Range	Up 33 ft (10 m)	
	Electrical Interface	USB 2.0 compliant	
		Microsoft Windows Plug and Play compliant	
	Bluetooth Software Supported	Broadcom Bluetooth for Windows	
		Microsoft Windows Bluetooth Software	
	Link Topology	Point to Point, Multipoint Pico Nets up to 7 slaves	
	Security	Full support of Bluetooth Security Provisions	
	Power Management	Microsoft Windows ACPI, and USB Bus Support	
		Self configurable to optimize power conservation in all operating modes, including Standby, Hold, Park, and Sniff	
	Certifications	All necessary regulatory approvals for supported countries, including:	
		FCC (47 CFR) Part 15C, Section 15.247 & 15.249	
		ETS 300 328, ETS 300 826	
		Low Voltage Directive IEC950	
		UL, CSA, and CE Mark	
	Temperature	Operating	-4° to 158° F (-20° to 70° C)
		Non-operating	-40° to 176° F (-40° to 80° C)
	Humidity	Operating	10% to 90%
		Non-operating	5% to 95%
	Altitude	Operating	15,000 ft (4,572 m)
		Non-operating	40,000 ft (12,192 m)

	Bluetooth Profiles Supported	Serial Port Profile (SPP)[1] Service Discovery Applicaton Profile (SDAP) Dial-Up Networking (DUN)[1,2] Generic Object Exchange Profile (GOEP)[1,2] Object Push Profile (OPP)[1,2] File Transfer Profile (FTP) Synchronization Profile (SYNC) Hard Copy Cable Replacement (HCRP)[1,2] Personal Area Networking Profile (PAN)[1,2] Human Interface Device Profile (HID)[1,2,3] FAX Profile (FAX) Basic Imaging Profile (BIP)[2] Headset Profile (HSP) Hands Free Profile (HFP) Advanced Audio Distribution Profile (A2DP)

1. indicates the profile is supported by Microsoft Windows XP SP2
2. indicates the profile is part of Windows Vista

Environmental Data

Eco-Label Certifications

This product has received or is in the process of being certified to the following approvals and may be labeled with one or more of these marks:

- US ENERGY STAR®
- IT ECO declaration
- EPEAT - Gold where HP registers commercial notebook products. See http://www.epeat.net for registration status in your country.

System Configuration

The configuration used for the Energy Consumption and Declared Noise Emissions data for the Convertible Mini tower Desktop model is based on a "Typically Configured Notebook"

Energy Consumption	115 VAC	230 VAC	100 VAC
Normal Operation	10.93 W	10.55 W	10.308 W
Sleep (Energy Star low power mode)	0.888 W	1.056 W	0.864 W
Off	0.66 W	0.804 W	0.636 W

Heat Dissipation*	115 VAC	230 VAC	100 VAC
Normal Operation	37 BTU/hr	36 BTU/hr	35 BTU/hr
Sleep	3 BTU/hr	4 BTU/hr	3 BTU/hr
Off	3 BTU/hr	3 BTU/hr	2 BTU/hr

* Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.

Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)

System Fan Off	Sound Power (LWAd, bels)	Sound Pressure (LpAm, decibels)
Idle	1.92	19.2
Fixed Disk (random writes)	1.98	19.8

System fan is usually off except when charging the battery

Batteries

This battery(s) in this product comply with EU Directive 2006/66/EC

Batteries used in the product do not contain:

- Mercury greater the 5ppm by weight
- Cadmium greater than 10ppm by weight

The battery type and chemistry used in the product is:
CR2032 (coin cell), Li-ion
6-cell high capacity Lithium-Ion battery (optional 8 cell available)

Additional information

This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2002/95/EC.

This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive - 2002/96/EC.

This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).

This product is in compliance with the IEEE 1680 (EPEAT) standard at the Gold level, see www.epeat.net

Plastics parts weighing over 25 grams used in the product are marked per ISO 11469 and ISO1043.

This product contains 0.11% post consumer recycled plastic (by wt.)

This product is greater than 95.7% recycle-able when properly disposed of at end of life.

Packaging Materials

- External:
  - Corrugated 326 g
  - Corrugated Carton 412 g
- Internal:
  - Polyethylene low density 20 g
  - Molded Pulp 150 g
- The Corrugated packaging material is made from 85.8% recycled content.
- The Corrugated Carton packaging material is made from 85.8% recycled content.
- The Polyethylene low density packaging material is made from 0% recycled content.
- The Molded Pulp packaging material is made from 0% recycled

content.

HP follows these guidelines to decrease the environmental impact of product packaging:

- Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials.
- Eliminate the use of ozone-depleting substances (ODS) in packaging materials.
- Design packaging materials for ease of disassembly.
- Maximize the use of post-consumer recycled content materials in packaging materials.
- Use readily recyclable packaging materials such as paper and corrugated materials.
- Reduce size and weight of packages to improve transportation fuel efficiency.
- Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.

Material Usage

This product does not contain any of the following substances in excess of regulatory limits (for reference of these limits please refer to the HP General Specification of the Environment: (http://www.hp.com/hpinfo/globalcitizenship/environment/supplychain/gen_specifications.html):

- Asbestos
- Certain Azo Colorants
- Certain Brominated Flame Retardants - may not be used as flame retardants in plastics
- Cadmium
- Chlorinated Hydrocarbons
- Chlorinated Paraffins
- Formaldehyde
- Halogenated Diphenyl Methanes
- Lead carbonates and sulfates
- Lead and Lead compounds
- Mercuric Oxide Batteries
- Ozone Depleting Substances
- Polybrominated Biphenyls (PBBs)
- Polybrominated Biphenyl Ethers (PBBEs)
- Polybrominated Biphenyl Oxides (PBBOs)
- Polychlorinated Biphenyl (PCB)
- Polychlorinated Terphenyls (PCT)
- Polyvinyl Chloride (PVC) - except for wires and cables, and certain retail packaging has been voluntarily removed from most applications.
- Radioactive Substances
- Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)

Nickel finishes that release greater than 0.5 μgrams/cm2/week, measured according to EN 1811:1998, are not used on any product surface designed to be frequently handled or touched by users.

End-of-life Management and Recycling

Hewlett-Packard offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to:

	http://www.hp.com/go/reuse-recycle or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner. The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: http://www.hp.com/go/recyclers. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.
Hewlett-Packard Corporate Environmental Information	For more information about HP's commitment to the environment: Global Citizenship Report http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html Environment website http://www.hp.com/environment Eco-label certifications http://www.hp.com/hpinfo/globalcitizenship/environment/productdesign/ecolabels.html ISO 14001 certificates: http://www.hp.com/hpinfo/globalcitizenship/environment/operations/envmanagement.html

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